REMARKS

As the basis for determination of differences between the subject matter sought to be patented and the prior art, both the first and the second Office Actions contain precisely the Applicant Admitted Prior Art (AAPA), according to 35 USC § 103. The Applicant presented a detailed analysis of the Lattice methodology ("In-System Programming Design Guidelines for ispJTAG Devices", February 2002) in the previous reply.

In particular, it was pointed out that the Examiner had erroneously failed to notice availability in Lattice of a common bus, which is conventionally omitted in drawings presented in the special literature, but which is present in the actual circuit. As a result, Lattice comprises four (rather than one, as the Examiner assumed) communication lines, which should be considered independently. The above consideration demonstrates that any of the aforesaid communication lines comprises one resistor only. As distinct from the claimed invention, no second resistor is installed in the common bus in Lattice.

Moreover, with the processor in operation, i.e., with signals being transmitted along a communication line (which is solved in this invention), even this single processor available in Lattice is switched off the communication line. In Lattice, it is recommended to be used briefly at the moment of switching on the power supply, when the processor is being switched on for the first time, and is used for quite different purposes, namely, to eliminate voltage surges at the moment of the processor power supply being switched on.

The Examiner presented no objections regarding the aforesaid analysis of the Lattice technique, whereas a new cited reference is specified in the second solution (Olsen (US, 5051980)).

The Applicant agrees that the Applicant Admitted Prior Art (AAPA) and Olsen (US, 5051980) teaching are analogous art because they are from the same field of communication systems. Moreover, AAPA comprises two methods of transmission of discrete electrical signals from transmitter to receiver, known as RS-232 and RS-485. The new cited reference – Olsen, is a method of transmitting signals through RS-232.

The Examiner is right to note that, both in the first and in the second solution; the AAPA does not disclose that the first wire of the communication line is grounded via a second resistor, the first and second resistors having the same resistance. However, the Examiner Attorney is wrong to claim that "Olsen discloses that the first wire of the communication line

is grounded via an additional resistor whose value is equal to the value of the first resistor (fig. 7 claim 11 page 6 "pin connections after programming" section)".

The Applicant draws the Examiner's attention to the fact that the essence of the claimed technique lies right in the structure of the communication line between transmitters and receivers, as well as in the principle of signal transmission and reading of the signal voltage value relative to the first wire of the communication line, which involves using the claimed structure of communication line.

At the same time, a newly cited reference - Olsen (US. 5051980) does not disclose the structure of communication line, but rather the structure of a receiver (voltmeter) characterized by balanced resistors of the same value: R73 and R75, R72 and R74, R71 and R76 (see Fig. 7). Therefore, neither AAPA, nor Olsen (taken independently, or combined) disclose the claimed principle of transmitting the signal and reading its value.

The Applicant's following arguments will become more apparent upon reference to the following drawings.

Brief description of the drawings:

Fig. 1 – electrical diagram /structure of RS-485 communication line. Please, note that here R3 corresponds to R71 and R76 in Olsen, Fig.7, R2 corresponds to (R72+R73) and (R74+R75).

Fig. 2 - electrical diagram /structure of communication line of the present invention.

Fig. 3 - electrical diagram /structure of communication line of the invention RS-232, Olsen.

Fig. 4 - electrical diagram /structure of communication line obtained according to the Examiner's recommendations, i.e., by means of incorporation of RS-232 (Olsen) and AAPA.

As it is the structure of communication lines between receivers and transmitters, which defines the essence of the claimed technique, in the Applicant's view, it is necessary, first of all, to compare the claimed structure of communication line to known structures of communication line disclosed in RS-485 and in RS-232.

As distinct from the claimed structure of communication line, the known communication line (both in RS-232, and in RS-485) contains no power supply in its structure, where the RS-232 communication line contains one transmitter and one receiver, while the RS-485 communication line contains *n*- receivers and *n*- transmitters.

To provide better understanding of the essence of the matter, the Applicant proposes first to compare the claimed invention to RS-485, and only then to RS-232 (Olsen).

Like the claimed method, RS-485 constitutes a two-wire communication line (the third wire – common bus – being optional), connected to a certain number of transmitters and receivers communicating by means of transmission of a logical signal in the binary code. However, the principles of transmission of logical signal in RS-485 and in the claimed technique are fundamentally different, which will be shown below.

The Applicant draws the Examiner's attention to the fact that the structure of the RS-485 communication line contains no elements but a pair of wires 1,2 (see Fig.1), and therefore the communication line is passive in a sense that it does not act as a power supply for communication of signals between transmitters and receivers. In RS-485, transmission of signals is performed owing to the energy of transmitter, which the transmitter receives from its power supply, which does not make a part of the communication line structure, instead making a part of the transmitter itself. The need in an external power supply located beyond the communication line structure is one of the shortcomings of RS-485, as it requires each device (a transmitter, a receiver) connected to the communication line to have a second (reserve) power supply. To ensure the system's reliability, every device must have a second (reserve) power supply – generally, a storage battery – as well as an additional power supply to recharge this battery, devices for monitoring operability of the first and second power supplies, with the relevant information communicated to the central control board, with regular maintenance of all the aforesaid devices, etc.

Receivers in RS-485 receive signals from transmitters by measuring voltage between the wires of communication line, that is, act as voltmeters. The design of these voltmeters may be of various kinds, yet differential amplifiers with symmetrical inputs are most often used for this purpose. Olsen discloses one of the embodiments of the structure of a receiver (voltmeter) with symmetrical inputs, but not the structure of communication line. Fig.1 presents a structure of this particular receiver, which has two identical (equal) resistors R2 at its input corresponding to resistors (R72+R73) and (R74+R75) in Fig.7 (Olsen), as well as two resistors R3 setting the initial displacement of differential amplifier, which correspond to resistors R71 and R76 in Olsen, Fig.7. Here, resistors R73 and R75 perform the protective function, have a small resistance value (i.e., R72>>R73 and R74>>R75), and may be disregarded in calculations.

It is well known that any voltmeter must be designed in such a way to contribute minimum distortion in the signal it measures. Subject to this requirement, the receivers are designed in such a way that resistors R2 and R3 have a large value (just like resistors R71, R76, (R72+R73), (R74+R75)) and produce no effect on generation of signals in the

communication lines, or on variation and passage of these signals along the communication line. In other words, they do not constitute elements of the communication line structure, i.e., they are not related to the design of communication line and do not make a part of the above structure. Resistors R2 and R3 (just like R71, R76, (R72+R73), (R74+R75)) make a part of the design of a receiver-voltmeter. Here, this part is not obligatory, as other versions of implementation of the receiver design are also possible. What the newly cited reference (Olsen) discloses is just a particular embodiment of the design of voltmeter, not the structure of a communication line between the receiver and the transmitter.

The structure of communication line according to the claimed invention is presented in Fig. 2.

In addition to two wires, the claimed structure of communication line comprises active and passive elements, namely, a single power supply of communication line and two resistors R1 limiting the current in the line. The Applicant is to draw the Examiner's attention to the fact that there are no resistors of a similar function in RS-485, RS-232, or in Olsen. In the claimed technique, transmitters are passive devices power-supplied from the communication line, whereas transmission of a logical signal in the binary code is exercised by closing the line with a transmitter by means of an electronic key. Receivers in the claimed method may be the same as in RS-485, i.e., they may be implemented in the form of a differential amplifier with symmetrical inputs, in a way similar to Fig. 1, or in the form of any other design.

Therefore, in the known methods of signal transmission (RS-485), resistors R2 and R3, as well as resistors R71, R76, (R72+R73), (R74+R75) (Olsen, Fig.7) make a part of the structure of receiver-voltmeter, and, hence, must not and do not affect formation and passage of signals in the communication line, i.e., resistors R2 and R3, as well as R71, R76, (R72+R73), (R74+R75), are not elements of the communication line. As distinct from them, resistors R1 installed between the power supply of communication line and the transmitter, determine parameters of the signal generated by the transmitter, i.e., they are elements of communication line in implementation of the claimed technique of signal transmission.

If we consider once again the method RS-232 (Olsen), we will see that this method provides for several communication lines (see Fig. 3 of this reply), each of them being a particular case of RS-485, in a sense that it only contains one transmitter and one receiver. Here, we should take into account that Fig.7 (Olsen) only presents one of two devices participating in communication, and, for better understanding, this device is enclosed with a dashed line in our Fig. 3.

The physical essence of the RS-232 transmitter, receiver and communication line shown in Fig. 3 are similar to RS-485. In other words, the receiver in the form of a differential amplifier with its resistors R2 and R3 (R71, R76, (R72+R73), (R74+R75)) does not affect the form of the signal generated by the transmitter and subsequently transmitted along the communication line; therefore, the above resistors cannot be considered elements of communication line, i.e., elements affecting implementation of the claimed method.

Based on the foregoing, we may conclude that the Examiner has allowed a substitution of notions: the Examiner erroneously took resistors making a part of the design of receiver for resistors making a part in the structure of communication line. Therefore, the functional property of the receiver resistors, which lies in equality of their nominal values, may not be compared to the functional property of the communication line resistors, which, by mere coincidence, also lies in equality of their nominal values. As resistors of the receiver (voltmeter) and resistors of the communication line differ in their functional purpose, it is incorrect to compare equalities of their values.

Therefore, a combination of known methodologies disclosed in RS-232 (Olsen) and in AAPA (RS-232, or RS-485), which comprise an active transmitter, does not make it possible to obtain an entire claimed structure of communication line, as the claimed structure of communication line is fundamentally different in the fact that it comprises a power supply of communication line and two resistors R1 for limitation of current in the line.

The above power supply of communication line, without which it is impossible to implement the claimed method, is not compatible with any of the known methodologies disclosed in Olsen (RS-232) and in <u>AAPA</u>. Should a person of ordinary skill in the art combine the methodology disclosed by <u>AAPA</u>, or by Olsen, and the communication line equipped with a power supply in a single electrical diagram, there would occur a short circuit at the moment of signal transmission – BOOM!!!, as shown in Fig. 4.

Therefore, as of the date of creation of the invention, a person of ordinary skill in the art would find it obvious not to combine the methodology disclosed in AAPA and the methodology disclosed in Olsen, the more so since no grounded resistor is used in the communication line in Olsen (instead, in Olsen, a grounded resistor is used in the voltmeter (receiver) circuit, which has nothing to do with the claimed method).

As the Applicant has already pointed out, claim 3 is to be excluded. The Applicant previously noted in his email letter dated December 1, 2008 that the phrases "the first wire could <u>be floating ground</u>" and "the first pole of the power supply and …<u>are grounded to a floating ground</u>" aren't correct. Please, note that the term "floating ground" was used by

Applicant only as a physical model to describe a phenomenon that takes place in the working system for transferring signals (new claim 2), wherein first wire is connected to a common wire (a ground bus) via a (second) resistor. There is no any real element "a floating ground" in the above-mentioned system. It's only imagination.

Respectfully submitted,

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